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09/910,583

07/20/2001

Kevin Mukai

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32588 7590 03/17/2008

APPLIED MATERIALS, INC.

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EXAMINER

TUROC, DAVID P

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/910,583
Filing Date: July 20, 2001
Appellant(s): MUKAI ET AL.

Justin K. Brask
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/31/2008 appealing from the Office action mailed 8/2/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

KR 2001055915	Yang	07.04.2001
EP 0843348	Xia et al	20.05.1998

EP 1139403

Germann et al.

04.10.2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 14-17 rejected under 35 U.S.C. 103(a) as being unpatentable over KR 2001055915 (KR 915) in view of EP 843348 (EP 348) and further in view of EP 1139403 (EP 403).

KR 915 discloses a method comprising providing a substrate having a silicon nitride layer, depositing a BSG film of 10-150 Angstroms thickness thereon by flowing source gases for a predetermined amount of time within the ranges as claimed, depositing a film of BPSG on the BSG layer, and then flowing hydrogen and oxygen over the structure at a temperature of 800-900 °C for 10-60 seconds (abstract, page 5-8). As the BSG layer has thicknesses in the disclosed range, it will inherently prevent reaction of phosphorus with the nitride layer.

KR 915 does not explicitly disclose that the substrate is provided in a reaction chamber, or that silicon, oxygen, and boron sources are provided into the chamber to form the BSG layer, or that silicon, oxygen, boron, and phosphorus sources are provided into the chamber to form the BPSG film.

However, because EP 348 discloses that providing a substrate in a reaction chamber, providing silicon, oxygen, and boron sources into the chamber is effective for

Art Unit: 1700

forming a BSG layer on the substrate and flowing silicon, oxygen, boron, and phosphorus sources into the chamber is effective for forming a BPSG layer on the substrate (page 29, line 24-page 31, line 20), it would have been obvious to have deposited the BSG and BPSG layers in this manner with a reasonable expectation of these steps being suitable for forming these layers.

The above applied art do not explicitly disclose delaying introduction of the source gases into the chamber until their flows stabilize. However, because EP 403 discloses that allowing the source gases to bypass the chamber until their flows stabilize when depositing doped silicon oxide films such as BPSG prevents higher dopant concentrations in the first few nanometers of the film and provides a homogenous dopant concentration in the film (0005-0009), it would have been obvious to delay introduction of the source gases to the chamber until their flows stabilize so as to achieve a homogenous dopant concentration in the film. To stabilize the ratio of the gases in a mixture, each of the gases in the mixture must each individually be stable. If one of the gases in a mixture is not stable then the entire mixture will not be stable. One of ordinary skill in the art would appreciate that there are only two ways of stabilizing a gas mixture, by stabilizing the entire mixture or by stabilizing each gas prior to mixing. Therefore, to stabilize the ratio of a mixture, it would have been obvious to one of skilled in the art to stabilize each gas flow individually with a reasonable expectation of success to achieve the desired result of stabilizing the ratio of the gases.

(10) Response to Argument

Claim Rejections – 35 USC 103(a)

Claims 14-17

The appellant has argued against the EP 403 reference, stating the reference discloses stabilizing the gas mixture ratio before introducing the gas and, therefore, fails to disclose stabilizing individual flows. The examiner respectfully disagrees. While EP 403 may disclose stabilizing the gas mixture ratio, such a disclosure suggests that the gases are individually stabilized. To stabilize the ratio of the gases in a mixture, each of the gases in the mixture must each individually be stable. If one of the gases in a mixture is not stable then the entire mixture will not be stable. Therefore, by stabilizing a gas comprising all the components, then each gas is individually stabilized. At the very least, to stabilize the ratio of a mixture, it would have been obvious to one of skilled in the art to stabilize each gas flow individually to achieve the desired result of stabilizing the ratio of the gases.

The appellant has argued against the EP 403 reference, arguing that it is well known that the mixture of gases does not necessarily exhibit the combined properties of each of the individual gases, and therefore, merely because a mixture of gases is stabilized, it does not mean that the individual gases would otherwise be stabilized under the same conditions. Initially, the examiner notes that such a statement is merely conjecture by the appellant and unsupported by any factual evidence on the record. It is well settled that arguments of counsel unsupported by competent factual evidence of

Art Unit: 1700

record are entitled to little weight. *In re Payne*, 606 F.2d 303,315, 203 USPQ 245,256 (CCPA 1979). Specifically, the appellant has not provided any evidence that supports the position as argued. Even in the event that any evidence is provided, the examiner notes that EP 403 discloses stabilizing the ratio, and therefore, the examiner maintains that at the very least to stabilize the ratio of a mixture, it would have been obvious to one of skilled in the art to stabilize each gas flow individually to achieve the desired result of stabilizing the ratio of the gases because the combination of a stable individual flows (at a stable flow rate) would predictably lead to a stable ratio of gases. When two stable flow rates are combined, one of ordinary skill in the art would predict that the combination would be a stable ratio of those gases. As for the appellant's argument with regards to conditions for stabilization of individual gases versus a mixture of gases, the examiner notes that such is well within the skill of one ordinary in the art taking the disclosure of EP 403 into consideration.

In response to the appellant has argued that the examiner has not provided evidence to support the argument of obviousness, the examiner maintains that it would have been obvious to one of skilled in the art to stabilize each gas flow individually to achieve the desired result of stabilizing the ratio of the gases because the combination of a stable individual flows (at a stable flow rate) would predictably lead to a stable ratio of gases. When stable flow rates are combined, one of ordinary skill in the art would predict that the combination would be a stable ratio of those gases.

For the above reasons, it is believed that the rejections should be sustained.

Art Unit: 1700

Respectfully submitted,

David Turocy

/David Turocy/

Examiner, Art Unit 1792

Conferees:

/Timothy H Meeks/

Supervisory Patent Examiner, Art Unit 1792

/Kathryn L Gorgos/

Kathryn Gorgos